THE LOWER ELK RIVER WATERSHED BASED PLAN

Plan for the Implementation of the
Lower Elk River TMDL
in Little Sandy and Blue Creeks

Partners

West Virginia Department of Environmental Protection
Kanawha County Health Department
West Virginia Conservation Agency
West Virginia Division of Forestry

Partners

Organization	Acronym
West Virginia's Watershed Management Framework	WVWMF
WV Department of Environmental Protection	WVDEP
Office of Oil and Gas	OO&G
Nonpoint Source Program	NPSP
Environmental Enforcement	EE
West Virginia Conservation Agency	WVCA
West Virginia Division of Forestry	WVDF
Kanawha County Health Department	KCHD
Little Sandy Watershed Association	LSWA

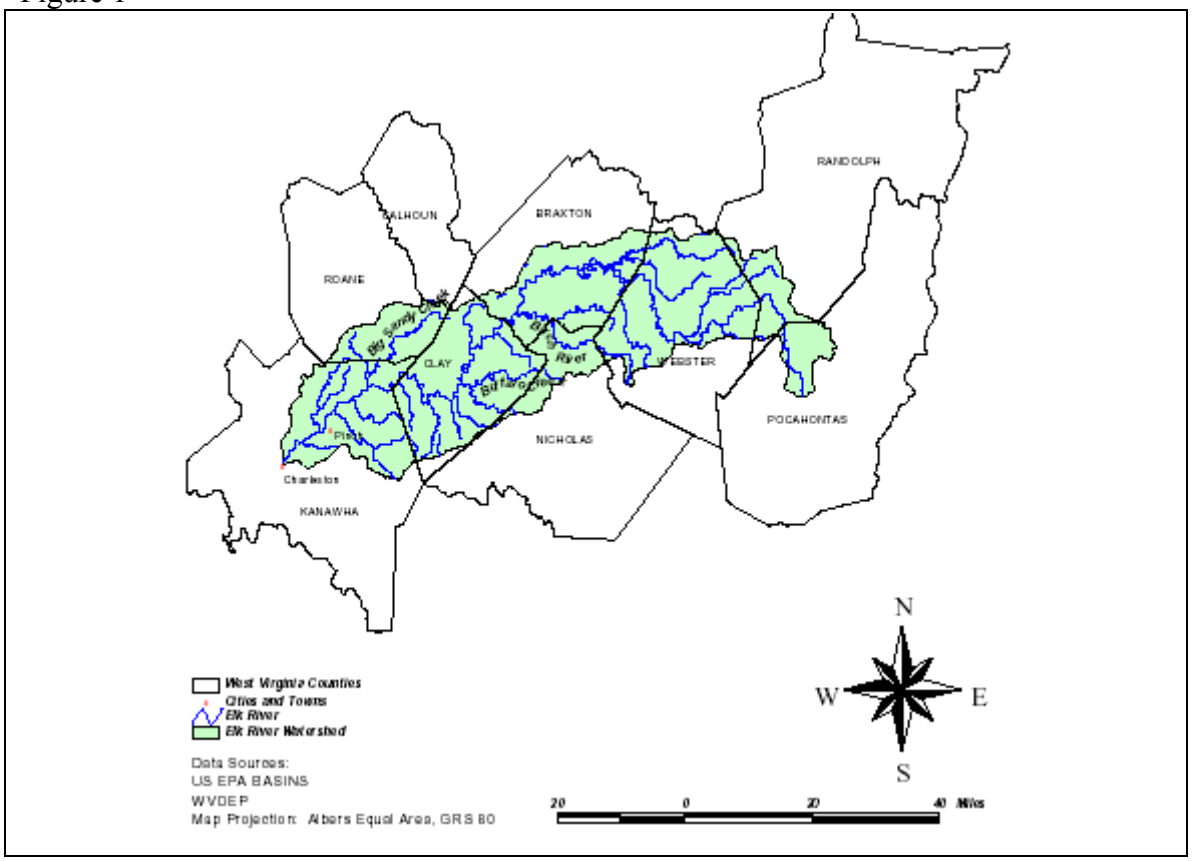
Cover: Elk River emptying into the Kanawha River.

The Blue Creek and Little Sandy Creek Watershed Based Plan

Introduction

The Elk River in central West Virginia originates near Slaty Fork, West Virginia, and flows approximately 190 miles west where it empties into the Kanawha River at Charleston, West Virginia. The Elk River watershed drains approximately 1,530 square miles (979,724 acres) and covers parts of nine counties in West Virginia (Figure 1).

Figure 1

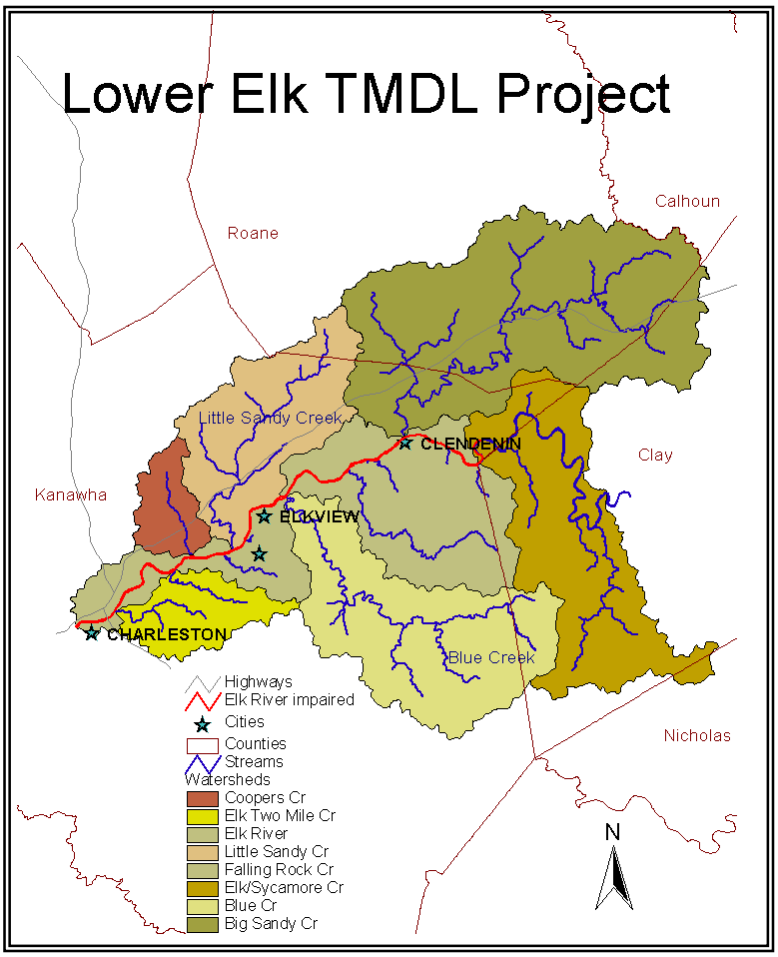


The Elk River was placed on the state's 303(d) list due to violations of iron and aluminum content. The Elk River Total Maximum Daily Load (TMDL) study completed and approved in 2001 calls for reductions in iron and aluminum to be made in the lower region of the Elk River watershed. Identified non-point sources are oil and gas activities, timber harvesting, all-terrain vehicle (ATV) damage as well as stream bank erosion on multiple tributaries and failing septic systems throughout the watershed.

The lower reaches of the Elk River, approximately from the Kanawha County line to the mouth, were listed on the 303(d) list and had a TMDL developed for that section. West Virginia's Watershed Management Framework (WVWMF) selected Little Sandy Creek and Blue Creek within that section as priority watersheds. At the time of the selection these two sub-watersheds were considered major contributors to the Elk River

impairment and both had active watershed associations. The purpose of this prioritization was to focus government resources on these two significant contributors to the impairment of the lower Elk River.

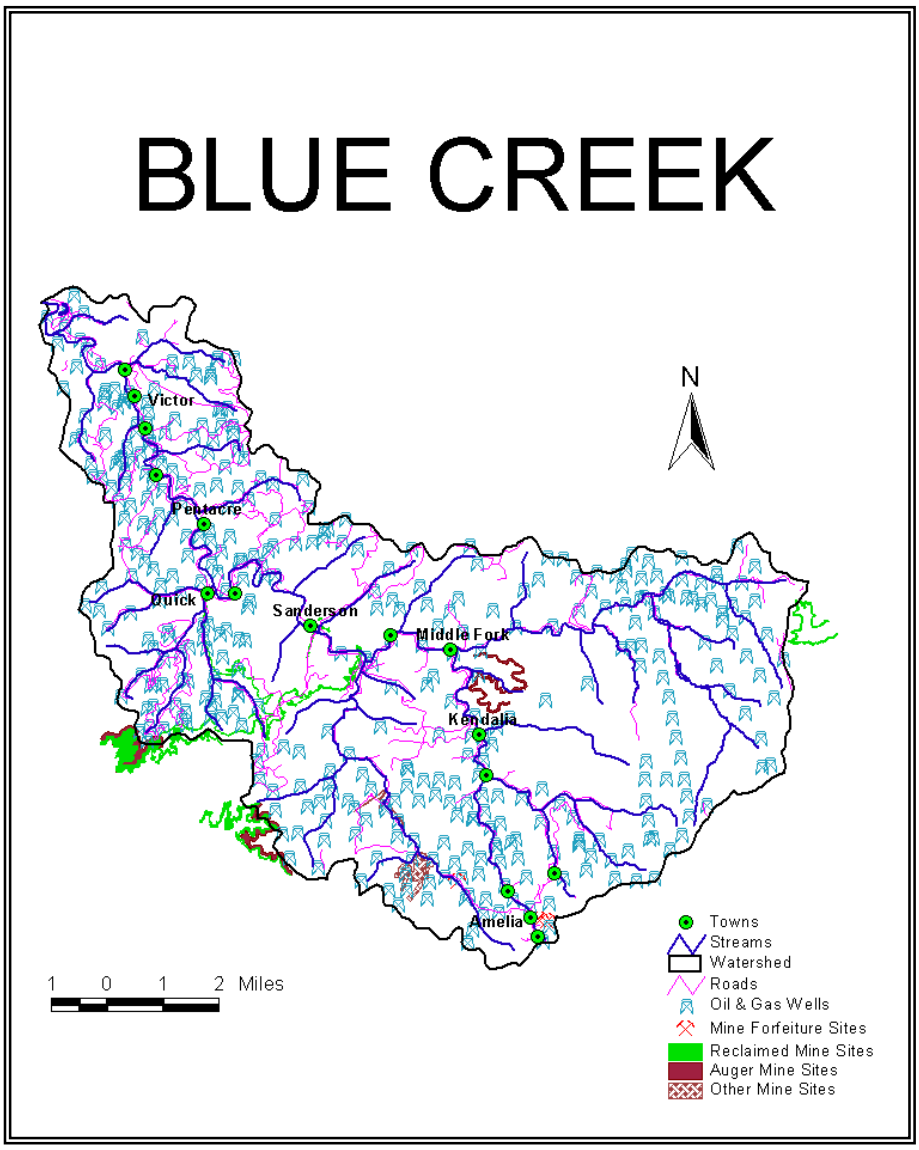
Figure 2



Key environmental stressors or threats were identified from information presented in the watershed assessments prepared in 2000 by the WVWMF partners and from information collected from the public. The documentation of public participation in the planning process, discussion of existing management activities within the watersheds, identification of roles for participating parties and the potential funding mechanisms for actions, and recommendations for future monitoring were presented in the Watershed Restoration Action Strategy submitted in 2000.

This plan will support a focused effort to achieve best management practice (BMP) cooperation from the oil and gas industry and from logging companies, restoration of abandoned dirt roads and education of recreational ATV users. This plan will also support assessment and planning phases for taking further action to reduce sediment loads from eroding stream banks and fecal contamination from failing septic systems.

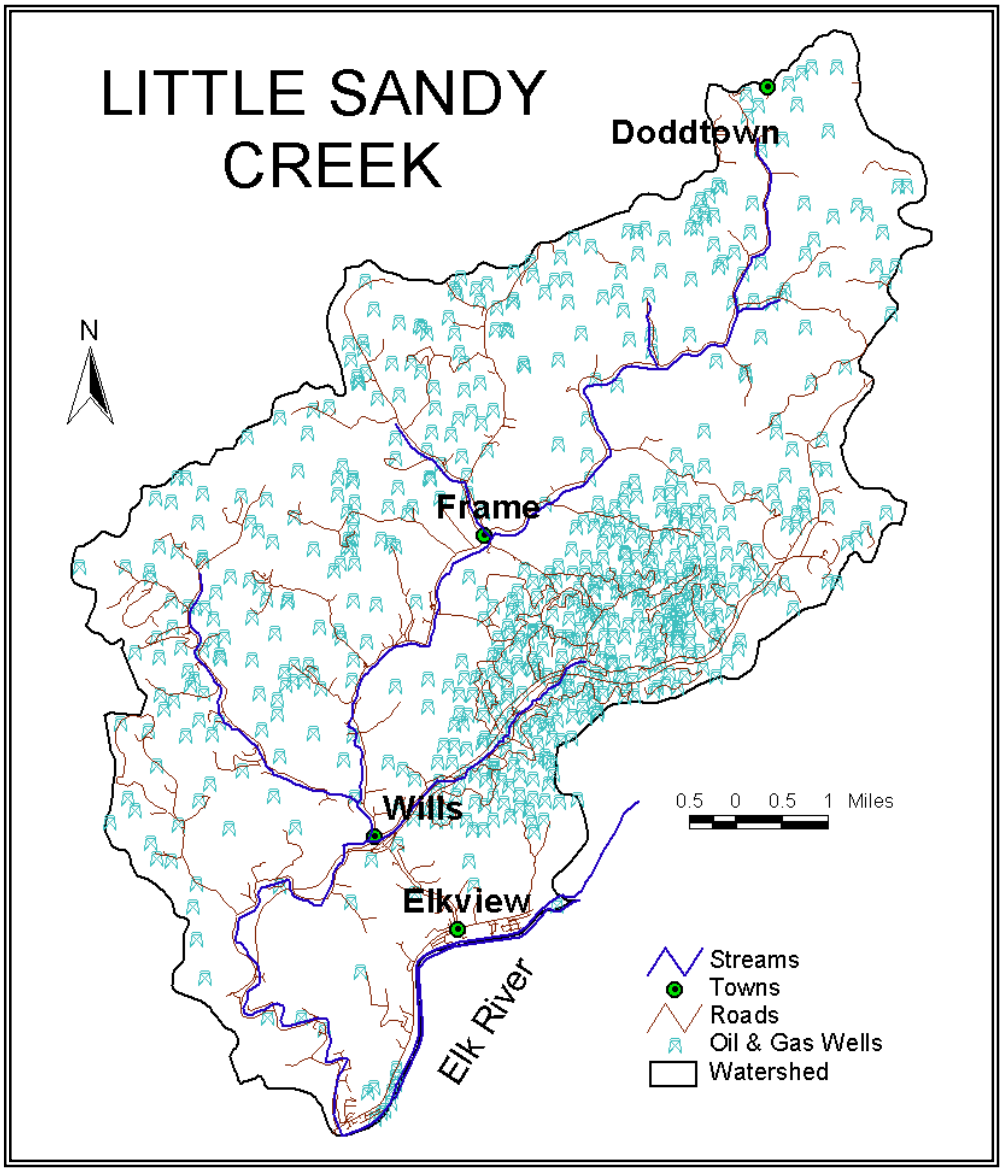
Figure 3



The Blue Creek (HUC 05050007140) watershed is located in the Lower Elk River area. The drainage area is approximately 80 square miles (51,000 acres). The largest population is located in the unincorporated community of Quick on Blue Creek. Over 98% of the watershed is forested. Agriculture use comprises 1.16% of the watershed activity and only .21% of the watershed is considered urban.

The Blue Creek watershed has several issues affecting the water quality including failed or non-existent septic systems, oil and gas wells (approximately 415 have been identified within watershed boundaries), timber harvesting, coal extraction and illegal ATV use on access roads.

Figure 4



The Little Sandy Creek (HUC 05050007150) watershed is also located in the Lower Elk River area. The drainage area is approximately 50 square miles (31,870 acres). The largest population is located in the unincorporated community of Elkview. In recent years Elkview has become a bedroom community for the city of Charleston, West Virginia. Ninety three percent of the watershed is forested and approximately 2,700 acres is designated as agricultural use.

Little Sandy Creek watershed has many of the same issues affecting stream quality as the Blue Creek watershed. Failed or non-existent septic systems, sedimentation, extensive oil and gas wells (694 documented within the watershed), timber harvesting and illegal ATV use on access roads all contribute to the overall problem.

A. An identification of the causes and sources that will need to be controlled to achieve the load reductions.

The project area, the lower Elk River watersheds, is known as Region 3 in the TMDL. According to the TMDL the lower Elk River is listed as impaired due to metals from an unknown source. This designation usually indicates excess sediment conditions causing dissolved metals to exceed water quality standards. The TMDL explains, "All potential sources of metals in the watershed were considered in the TMDL development process. Sediment sources were considered to be an important factor, because of the relatively higher concentration of metals in the soils of the Elk River watershed and the extent of land disturbance, especially in downstream areas (Elk mainstem)." In addition to metals the 1997 assessment by the Watershed Assessment Program (WAP) in the WVDEP indicates that violations of fecal coliform standards also occur especially in the Little Sandy Creek watershed.

For the impaired mainstem of the Elk River, TMDL load allocations were made for the dominant source categories, as follows:
• Oil and Gas wells - (loading from active oil and gas facilities)
• Harvested forest areas - (loading from annual forest harvest areas)
• Mining Related - (loading from active, inactive and revoked mining activities)
• Roads - (loading from unpaved and paved roads)
• Nonpoint Sources - (loading from cropland, mature forest, pasture, urban impervious, urban pervious)

SEDIMENT

The land use activities within these watersheds have resulted in 268.9 miles of unimproved (dirt) roads. The roads are considered the primary producer of sediment in these watersheds. The TMDL for the Blue Creek and Little Sandy Creek watersheds calls for load reductions from the oil and gas industry alone. However, the timber industry uses many of the bonded oil and gas roads for timber extraction from these watersheds. Presently the DEP Office of Oil and Gas (OO&G) and the Division of Forestry (WVDF) have been working together to decide what standards should be used when regulating sediment loads on multi-purpose roads. Recreational ATV use on active and abandoned access roads contributes to the problem by damaging existing roads as well as the creation of new trails adjacent.

Stream bank erosion has also been identified as a contributor to the sediment load within these watersheds. It is estimated that there are 47 miles of severely eroding streambanks in these two watersheds.

OIL AND GAS ACTIVITY

The Blue Creek and Little Sandy Creek watersheds are two of the richest oil and gas fields in the state of West Virginia with a total of 1109 wells located in both watersheds (415 in Blue Creek and 694 in Little Sandy Creek). The OO&G regulates active drilling

and extracting projects throughout these watersheds. Many wells have been capped due to low production and the access roads to these closed wells have been abandoned but still contribute a significant amount of sediment to the streams. Many of these roads have become multi-purpose access roads used by the timber industry and ATV users.

FORESTRY

There are 82,000 acres of forest land in both the Blue Creek and Little Sandy Creek watersheds. Timber harvesting is an ongoing practice in both areas. Most logging roads are "dual purpose" roads, meaning they are used by both gas and oil and logging. According to the West Virginia Division of Forestry (WVDF) in 2004 there was 3,283 acres of land being actively timbered in both watersheds. Blue Creek accounts for 1,423 acres and Little Sandy Creek contains the remaining 1,860 acres.

MINING

The Little Sandy Creek watershed has no mining impacts but Blue Creek has some contour mining with acid drainage. In Blue Creek watershed the tributaries of White Oak Fork, had low pH and School House Fork and Mudlick Branch had low pH and high aluminum levels.

NONPOINT SOURCE [AGRICULTURE, STREAMBANK EROSION & DEVELOPMENT]

Currently there are seven operating farms located within both the Blue Creek and Little Sandy Creek watersheds that receive $29,410 in Environmental Quality Incentive Program (EQIP) funds. Cattle account for 80% of the cash income from these operations. Four farms are located in the Blue Creek watershed and are a total of 840 acres. These are cattle production farms. There are three farms located in the Little Sandy Creek watershed comprising a total of 439 acres. Two hundred acres are used for hay production and pastureland to support approximately 200 head of cattle, 75 horses and 50 other assorted animals.

Due to the high sediment loads in the Little Sandy watershed virtually all of the stream miles in that watershed are showing a high degree of stream bank erosion. According to the 1997 assessment of Little Sandy Creek for the WRAS there are over 22 miles of impaired streambanks. The Blue Creek WRAS indicates there are over 25 miles of streambank impacts from sediment and habitat alteration. Any accurate load estimates from this impact are variable and unknown at this time.

Both Blue Creek and Little Sandy Creek join the Elk River in the vicinity of the town of Elkview, which is becoming a suburb of the city of Charleston. It is estimated that, on average, thirty new homes are built in each watershed annually. Again, any accurate sediment load estimates from nonpoint category impacts are variable and unknown at this time. However the monitoring and modeling for the TMDL indicates a total load for metals from all of these nonpoint sources as 13,951 lbs/yr of aluminum, 33,369 lbs/yr of

iron and 14,528 lbs/yr of manganese for the Little Sandy Creek watershed. In the Blue Creek watershed the baseline metal loads are 22,987 lbs/yr aluminum, 53,094 lbs/yr iron and 23,925 lbs/yr of manganese.

The total loads and allocations for aluminum and iron from the various categories in Blue Creek and Little Sandy as well as other subwatersheds and direct drains are listed in the Appendix Table 2. There is no load reduction called for in the TMDL for manganese.

FECAL COLIFORM

As indicated in Figure 4 from the 1997 watershed assessment, Little Sandy Creek had some of the highest concentrations of fecal coliform levels in the entire Elk River watershed. Figures 5 and 6 give the sample results for each of these subwatersheds from the assessment.

SEWAGE ISSUES

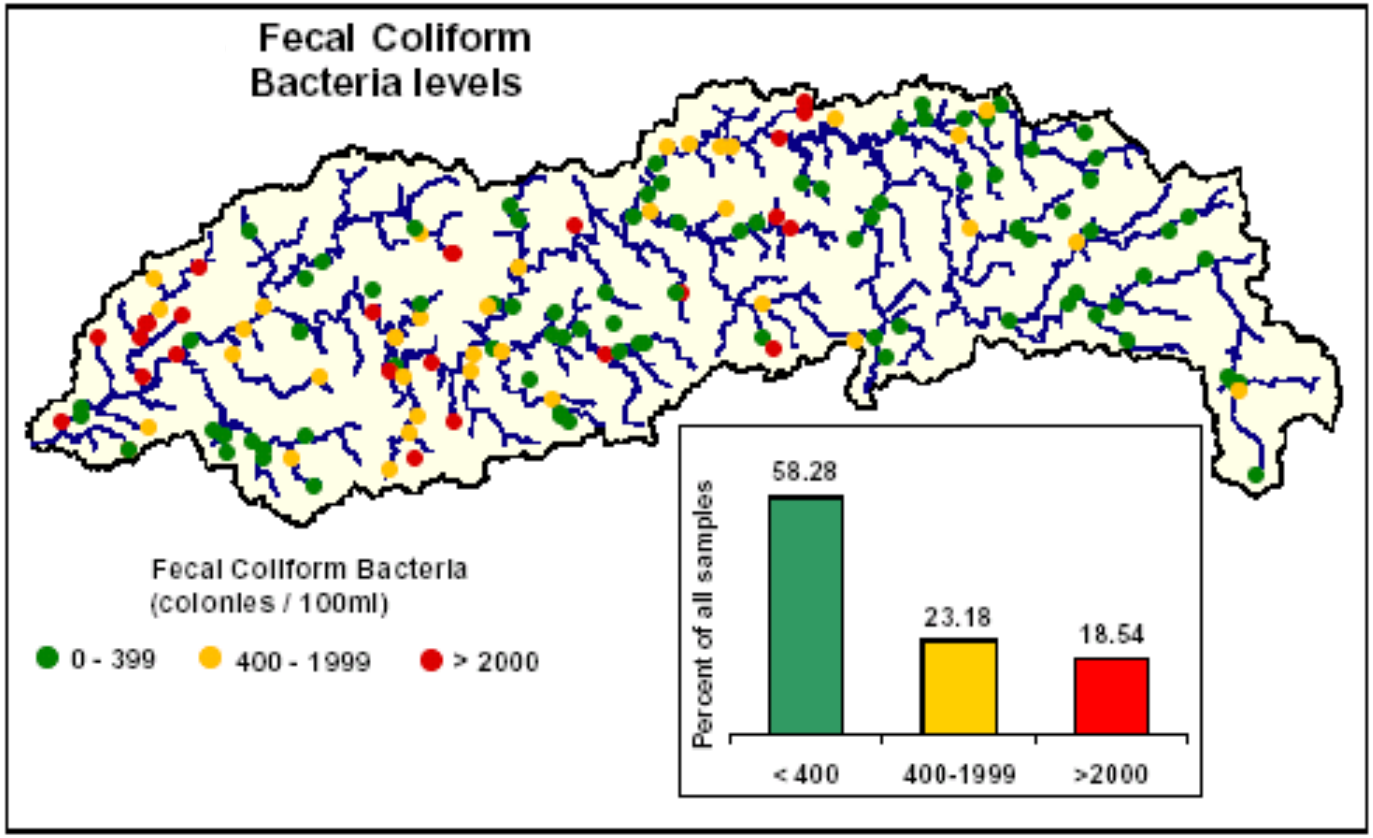
Since there is minimal agriculture in the watersheds, failing septic systems are considered the primary source. Due to the rural nature of the Blue Creek and Little Sandy Creek watersheds and the geographic limitations thereby imposed, public sewer is not an option for the foreseeable future. The problem is more chronic in the Little Sandy watershed with only occasional violations occurring in Blue Creek. All residences in these watersheds are unsewered so fecal coliform violations are perceived to be from either a lack of septic systems or malfunctioning septic systems. In 1997 the Kanawha County Health Department Sanitarians estimated that a probable failure rate for these decentralized systems was between 25-30%. More recent monitoring estimates that percentage may be as high as 70%.

Possible agriculture sources were covered in the nonpoint source section under sediment.

pH

Existing coal mining sites cause impacts to water quality within the Blue Creek. Current mine sites contribute metals and low pH to water conditions. All of these sites are regulated under the Surface Mining Reclamation and Control Act (SMCRA). It is assumed that enforcement of permits will correct these problems.

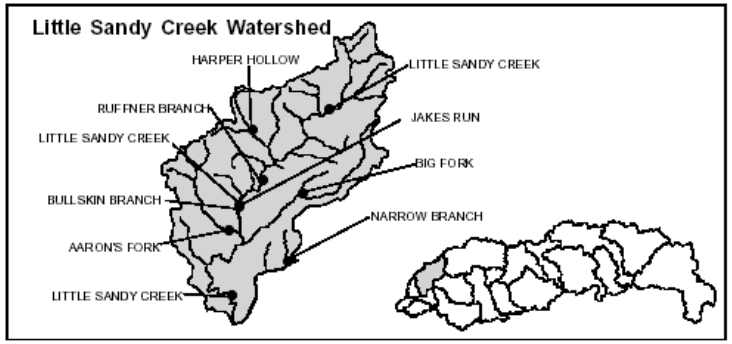
Figure 4



18.5 percent had levels equal to or higher than 2000. See Figure 11.

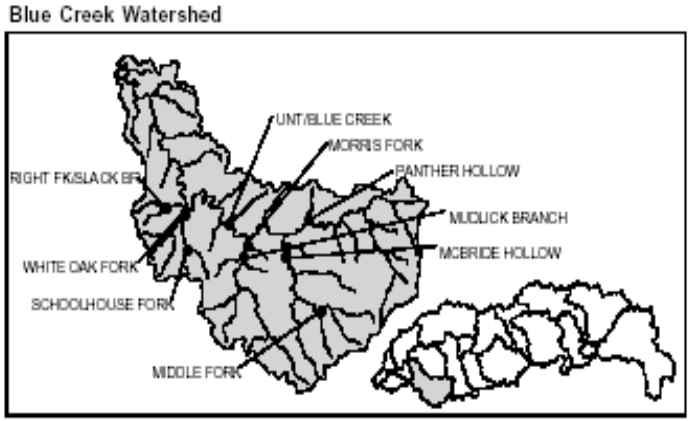
The high bacteria levels are, as expected, concentrated around population centers. There are noticeable increases in bacteria levels in the Charleston/Elkview, Clay, and Frametown/Gassaway/Sutton areas. High bacteria levels are nearly absent from the streams above Sutton Lake.

Figure 5



Little Sandy Watershed sites				
ANCODE	Stream Name	WVSCI	Total Habitat	Fecal
WVKE-9-B-1	BIG FORK	38.19	126	3000
WVKE-9-C-{0.6}	AARON'S FORK	70.75	156	4800
WVKE-9-E	BULLSKIN BRANCH	74.43	130	160000
WVKE-9-G	RUFFNER BRANCH	65.85	154	1200
WVKE-9-I-1-A	HARPER HOLLOW	80.57	167	900
WVKE-9-J	JAKES RUN	62.56	107	57000
WVKE-9-{1.5}	LITTLE SANDY CREEK	67.25	160	5000
WVKE-9-{15.0}	LITTLE SANDY CREEK	62.70	133	2200
WVKE-9-{8.2}	LITTLE SANDY CREEK	n/a	n/a	13000
WVKE-13	NARROW BRANCH	71.96	156	4200
Sites with potential benthic impairment in light gray box				
Sites with benthic impairment in dark gray box				
Fecal coliform bacteria violations in BOLD				

Figure 6



Blue Creek Watershed sites				
ANCODE	Stream Name	WVSCI	Total Habitat	Fecal
WVKE-14-G-1-{0.8}	RIGHT FK OF SLACK BR	73.37	167	110
WVKE-14-G-2	WHITE OAK FORK	63.18	161	68
WVKE-14-G-2-A	SCHOOLHOUSE FORK	65.58	154	84
WVKE-14-K.1	UNT OF BLUE CREEK	60.74	167	120
WVKE-14-M	MORRIS FORK	65.49	172	160
WVKE-14-M-2	MUDLICK BRANCH	59.62	168	300
WVKE-14-O-{5.2}	MIDDLE FORK	77.45	186	28
WVKE-14-O-0.5	MCBRIDE HOLLOW	82.79	188	700
WVKE-14-P	PANTHER HOLLOW	79.92	177	68
Sites with potential benthic impairment in light gray box				
Sites with benthic impairment in dark gray box				
Reference sites in bold italics				
Fecal coliform bacteria violations in BOLD				

Figures 4,5 & 6 from the WVDEP publication; *An Ecological Assessment of the Elk River Watershed*; 1997

B. An estimate of the load reductions expected for the management measures described under paragraph (c).

SEDIMENT

According to the Elk River TMDL completed in September 2001, there is a need for load reductions in aluminum and iron. The TMDL calls for a reduction of 51,561 lbs/yr of aluminum and 34,541 lbs/yr of iron exclusively from oil and gas activity. OO&G has conducted a random survey of oil and gas wells and roads within the Elk River watershed and was able to determine average characteristics of oil and gas activities. In the Lower Elk River watershed located in Kanawha County the average length of road to service wells was approximately 1300 feet, the average width was 25 feet and the average grade was 7%. This would indicate that approximately 268.9 miles of dirt roads are associated oil and gas activities in Blue Creek and Little Sandy. WVDEP GIS data shows that there are a total of 694 wells in the Little Sandy with 39 either abandoned or not applicable for regulation and there are 130 that are plugged, which means that 525 are either regulated or status is unknown (Table 1). These 150 wells would be the focus of CWA 319 restorations with an estimated 37 miles of service roads. In Blue Creek 19.5 road miles are from abandoned and plugged wells.

Table 1: *Status of oil and gas wells in Little Sandy and Blue Creek*

Watershed	Abandoned	Plugged	NA	Unknown	Regulated
Little Sandy	33	130	6	111	414
Blue Creek	31	48	-	4	332

Most of the oil and gas pipelines are vegetated and are of little impact but over two miles of pipelines have been surveyed as being sediment sources due to ATV use. This would mean that approximately 60 miles of pipeline and roads are eligible for restoration.

The TMDL is based on metals from sediment but the BMPs are based on reducing sediment and so are their load reduction estimations. Researchers at West Virginia University developed a mechanism for determining the relationship between metals and sediment that has been used for the Spring Creek project in nearby Little Kanawha River watershed. The determination of the aluminum standard has changed since the TMDL from total to dissolved aluminum (Section h) so for calculating load reductions the levels of iron will be considered. Iron pollutant loads are estimated to be 3.6% of the sediment load or 72.8 lbs/ton. This would calculate to 7,085,514 lbs/yr sediment load in the baseline from the TMDL for both Blue Creek and Little Sandy. The vast majority of this comes from the nearly 269 miles of service roads to the wells. The TMDL calls for a reduction target of 1,803,714 lbs/yr of sediment. That would equal a sediment load reduction of 6,705.25 lbs/yr/mile. The BMP model efficiency from the Region V Model for a restoration involving site preparation and hydro/mulch seeding is 71%. Using the average width of a road at 25 ft and calibrating the EPA Region V model to the TMDL baseline the restoration of one mile of dirt road would result in an estimated load reduction of 9.4 tons/yr/mile or 18,800 lbs/yr/mile. If the 60 miles of abandoned well

service roads and pipelines in both watersheds were restored the expected load reduction would be 1,128,000 lbs/yr of sediment or 39,480 lbs/yr or iron.

The majority of potential reductions could come from the active oil and gas wells in the watersheds, which are regulated under state law. This plan anticipates and supports the efforts of OO&G in education, technical assistance and enforcement with the companies. Also, working with companies to solve the problem of multi-use roads where they are responsible for the maintenance of the roads but not responsible for the majority of the damage being inflicted on them. Assuming the installation of the most common combination of BMPs that can be required under regulations has a combined efficiency of 40% that would mean a reduction rate for sediment of 10,800 lbs/yr/mile. It is estimated that 167 miles of the 269 would have to have this level of restoration to achieve the TMDL load reductions. Retiring and restoring the abandoned roads will achieve a more lasting and effective load reduction but must be combined with increased maintenance on active gas roads as well to accomplish the TMDL.

Another source of potential load reductions in sediment will come from streambank restorations. The EPA Region V model with an efficiency rating for streambank stabilization of 70% will result in a sediment load reduction of 388,000 lbs/yr/mile. The iron load reduction would be 13,580 lbs/yr/mile. There are 47 miles of impaired streambanks, which gives the potential of 638,260 lbs/yr reduction in iron. In reality, resources, landowner acceptance and access will limit the ability to restore all 47 miles. This plan will expect a combination of all the above sources to achieve the TMDL.

FECAL COLIFORM

There has been no loading data collected for fecal coliform in these watersheds, only concentration data. The first phase of this plan delivers a survey of failing septic systems by the KCHD to gain a better perspective of the impact of such systems on water quality. Monitoring for calculating fecal load reductions will be needed as well. In the meantime this plan bases its environmental results on water quality concentrations.

pH

There are no loading figures on acid in these watersheds. As a source covered by an NPDES permit it is assumed that enforcement will require reductions to achieve water quality standards.

C. A description of the NPS management measures that will need to be implemented to achieve the load reductions estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed-based plan), and an identification of the critical areas in which those measures will be needed to implement this plan.

OIL AND GAS / FORESTRY

The TMDL has listed load reductions only from oil and gas activity. To restore Blue Creek and Little Sandy Creek and to achieve additional load reductions, a comprehensive plan will be put in place to address sedimentation issues from all sources listed as causes of excessive loads.

Projects within this plan will support efforts to achieve BMP cooperation from both oil and gas companies and timber extraction companies. Initially, two miles of abandoned roads will be reclaimed and restored and 1000 feet of severely degraded pipeline will be protected from ATV access. One mile of abandoned road will be located in the Blue Creek watershed and one mile will be located in the Little Sandy Creek watershed. Two miles of road encompasses approximately 3.6 acres. To control water velocity and erosion water bars and out-sloping will be installed. A water bar will be installed every 100 feet, with a total of 105 bars installed.

Silt fence will be installed at areas where extreme slope requires it. Hay bales will also be used at each water bar to prevent sedimentation. Finally, all reclaimed road area will be seeded with a hydro-seeder to prevent further erosion.

AGRICULTURE

To address load reductions as a result of agricultural activity stream fencing will be utilized to keep cattle and horses out of creeks. Other options that will be utilized in addition will be feed pads, manure stacking facilities and promotion of riparian areas close to creek banks. These BMPs will be implemented through the EQIP program.

SEWAGE ISSUES

The process necessary to address this issue is three fold. Step one will require a house-by-house sewer survey of Blue Creek and Little Sandy Creek watersheds to get a grasp of the problem. The Blue Creek survey site will cover an area beginning at Three Mile and ending at Pond Gap. The Little Sandy Creek area will cover Aaron's Fork, Frame Road and Wills Creek. Step two will be the implementation of a demonstration project in an area that has been determined to be an area of high septic failure. Step three will be to draft plans to replicate the process throughout both Blue Creek and Little Sandy Creek watersheds.

There are approximately 1,650 homes located within these two watersheds (500 Blue Creek - 1,150 Little Sandy Creek). In order to complete a survey to determine septic

failure rate, the KCHD will assign teams of sanitarians to go house to house. This survey will require access to each house to evaluate the sewage system serving the home. A tracing dye will be introduced into each plumbing fixture and then a sufficient amount of water will be flushed through the system to simulate daily water usage. A visual inspection of the property will then be conducted to determine if all plumbing fixtures are connected to the septic tank and if the soil absorption field is capable of disposing of the quantity of wastewater generated in the home. Any system that discharges onto the surface of the ground or into any surface water and is not permitted to do so is considered a failing sewage system. The failure rate would be the number of homes with failing systems divided by the total number of homes and will be reported as a percentage.

The demonstration project proposed to address the failure rate could be anything from a new individual experimental sewage treatment system, an individual home aeration treatment unit with surfaced discharge or a cluster/small community sewage treatment system with either a sub-surface or surface discharge. The complexity of the demonstration project will vary depending on the amount of property available, number of homes served, soil type and permeability and topography of the land.

This demonstration project will be monitored for environmental results and cost effectiveness. Using information gathered during the first two phases for this component the Department of Health and Human Resources (DHHR) Nonpoint Coordinator will design a cost share project for septic systems to achieve water quality standards. The effort will be a targeted approach probably in the Little Sandy watershed since it shows the greater fecal coliform problem.

D. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement this plan.

Financial Assistance

First Project – 319 IncrementalProject

Project	319 funds	Match	Totals
Sanitarian Survey	$24,520	$15,840	$40,360
Personnel Budget	$44,334	$30,250	$74,584
Oil and Gas	$57,000	$38,000	$95,000
Conservation District Watershed		$ 3,000	$3,000

Associations		$ 8,000	$8,000
DEP Monitoring		$12,000	$12,000
In-Kind Education		$ 7,000	$ 7,000
TOTALS	**$125,854**	**$114,090**	**$239,944**

Future Projects

Road Restoration – Installation of BMPs on 269 miles of severely eroding roads at $5,000 per mile would equal $1,345,000 needed to reduce erosion to acceptable levels. A survey of the roads will be needed to determine a more precise number of these miles are under a bond, retired and not accountable by anyone. The cost of the survey expected to be $10,000.

Streambank restoration – Implementation needs can be variable dependent on the severity of the erosion and other variables. Projects conducted in West Virginia have averaged about $55/linear foot restored plus design and engineering costs. This would result in an expected cost of $290,400 /mile. Because of the high cost of streambank restoration, road restoration would be the more cost effective solution. Also, as the original source of sediment that is changing the hydrology of the streams it would be prudent to focus on road restoration above streambank restoration. Streambank restoration will be limited to special projects and demonstration projects. The average streambank restoration project in other CWA 319 projects is about 1133 feet. Using this average the anticipated cost of streambank restoration needs would be about $63,000.

The demonstration project for failing septic systems has many variables but experience in other watersheds would indicate a projected cost of $10,000 to $15,000. A project to repair all failing systems in the watersheds would cost an estimated $9,900,000. The survey conducted in the first phase will help target high risk areas to be cost effective and reduce the cost considerably. Until the survey is complete it would be guessing to assign a cost for this component.

TOTAL EXPECTED FINANCIAL ASSISTANCE

Project 1	$125,854
Road Restoration	$1,345,000
Road Survey	$10,000
Streambank Restoration	$63,000
Septic Demo	$10,000
Septic Watershed Project	?
Monitoring	$10,000
TOTAL	$1,563,854 *

* *Estimated $9.9 million for failing septic issues is not included.*

Funding Sources:

WV Stream Partners Program

Funding made available trough the WV Legislature to provide seed grants up to $5000 to watershed-based organizations to complete sustainable watershed improvement projects that have long-term effects on the community and watershed.

Forestry Incentive Program

Provides cost share money for tree planting, timber stand improvements and related practices on non-industrial private forestlands.

Environmental Quality Incentive Program

This program provides cost share dollars and incentive payments to agricultural producers who implement conservation practices aimed at improving water quality.

Agriculture Water Quality Loan Program

The Agricultural Water Quality Loan Program provides low interest loans to agricultural producers covered under an EQIP contract. Monies can be used to install conservation BMPs or to purchase equipment needed to maintain installed conservation practices.

WV DEP Construction Assistance Branch

Pending application approval, the WV DEP Construction Assistance Branch uses SRF dollars to provide low interest or no interest loans to communities for the installation of sanitary sewer and potable water lines.

WVDEP Nonpoint Source Program

Incremental grant funds are applied for through a S.319 grant proposal to EPA for the installation of BMPs needed to address various non point source pollution issues.

Wildlife Habitat Incentive Program

Program in which landowners sign a 5-10 year contract with NRCS to establish, improve and/or maintain wildlife habitat on their property. The program is put in effect through incentive payments and cost share to landowners for implementation of their contract.

Wetland Reserve Program

USDA purchases a 30-year easement to a portion of a landowner's property for the establishment of wetland/wildlife areas. The landowner still holds possession of the property and all expenses are covered by USDA.

Conservation Reserve Enhancement Program

Provide incentive payments for establishment of riparian habitat in pasture land.

Water and Waste Disposal Systems for Rural Communities

Provides monies to provide basic human amenities, alleviate health hazards and promote the orderly growth of rural areas. Funds may be used for the installation, repair, improvement, or expansion of rural water or waste facilities.

Contributions by private industry

In the form of in-kind services and donations to local watershed groups, industry, especially the oil and gas companies, provides technical, construction and financial support.

Technical Assistance

USDA Natural Resources Conservation Service – Provides technical assistance, education and funding for agricultural conservation programs and activities.
Pursue EQIP funding for Agricultural BMPs. Promote WHIP, WRP and CREP.

Capitol Soil Conservation District - Conducts educational activities. Manage project funds and provide administrative support for projects.

WV Division of Forestry – Responsible for enforcement of Logging Sediment Control Act. Provides technical and financial assistance to woodland owners for woodland best management practices. Provide a forest management plan to assist woodland owners to fully utilize the resource and stimulate long-term stewardship of their woodlands. In addition to addressing the timber, the plan emphasizes water quality, wildlife habitat, soil erosion, wetlands, and recreational opportunities.

WV Conservation Agency – Designated project management agency for agriculture and construction. Assists with coordination of all educational activities through local field staff, state NPS staff and the NPS Watershed Resource Center.

The Kanawha/Charleston Health Department will provide teams of sanitarians to go house to house to determine septic failure rates in the Blue Creek watershed. They have estimated the cost of the survey to be $24,520. This will be done in February 2005.

Kanawha County Planning Commission – Regulate building permits to reduce placement of fill and/or structures within the floodplain. Schedule “Free Trash Clean Up Days” within the watershed to allow residents to bring solid waste materials to a central location where it will be hauled to a sanitary landfill at no charge to the residents. Assist CSCD with educational activities and publications.

WV DOH – Regularly inspect and remove debris from state owned structures. DOH will do a review of the watershed and report back within the next six months. If a problem is affecting the roadway, it will be removed if it is accessible from the DOH right-of-way.

WV DEP – Division of Water and Waste Management – Management agency for NPS program. Conduct monitoring through Watershed Assessment Program.

WV DEP – Office of Abandoned Mine Lands – Responsible for the implementation of projects to remedy problems associated with abandoned mine lands. Will oversee the reclamation of existing mine sites.

WV DEP – Office of Oil and Gas – Field investigation of complaints related to the Oil and Gas Industry. Collect data on abandoned oil and gas wells with GIS to allow ranking and possible funding for pollution abatement projects. Assist with educational meetings within the watershed for schools, the industry and the public. Responsible for enforcing regulations related to the Oil and Gas industry.

WVDEP – Office of Waste Management – Provide assistance with the clean up of illegal dumps through their open dump program.

WV DNR Law Enforcement – Field investigation of complaints related to illegal dumps and non-permitted stream work. New high tech surveillance equipment will be used to reduce impacts from illegal dumping.

WVDNR Fisheries – Provide technical assistance with demonstration projects designed to improve in-stream habitat within the watershed.

WV Watershed Management Framework – Responsible for identifying priority watersheds for interagency cooperative efforts.

USDA Farm Service Agency – Provide cost sharing assistance through EQIP, pending funding of these programs.

Canaan Valley Institute – Foster development of a watershed association. Provide assistance with monitoring activities, location of additional resources, implementation of projects and other actions. Provides grants to eligible, local watershed groups to build local capacity and to identify and solve problems that are negatively impacting the natural and economic resources.

E. An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing and implementing the NPS management measures that will be implemented.

The WVCA is taking a leadership role in developing and distributing a wide variety of informational videos, pamphlets, activity booklets (for school children) and other types of material to be disseminated among the residents of both watersheds. It is hoped that this educational "blitz" will raise awareness and encourage participation in maintaining a healthy watershed.

The Little Sandy Watershed Association (LSWA) has received a donation of land next to the creek. On this lot they intend to build a small community park and have requested

this to be a site of a natural stream design restoration project where they will provide educational signs and events. Flooding and streambank erosion are the major water related issues in the view of the local citizens. This educational effort will focus on riparian protection and the flooding and erosion impacts of sediment.

The WVCA will produce and distribute educational materials directed at ATV users to explain the detrimental impacts of ATV use and how their sport can participate in protecting the watershed. This will be taken to ATV dealers and clubs as a part of an awareness campaign.

The WVDEP through its WV Save Our Streams program will foster citizen monitoring of the watersheds. Through this program, awareness of nonpoint source issues will be highlighted. The OO&G will conduct workshops for the oil and gas companies in these watersheds regarding proper road construction and maintenance.

The WVDF conducts logger training workshops on a regular basis but they will focus special effort on loggers in these priority watersheds.

F. A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

Milestone Schedule for the first project:

Complete and submit watershed based plan for approval	2/1/05
Plan critical treatment area for four miles of abandoned roads	4/1/05
Implement critical treatment area of abandoned roads	9/1/05
Complete 1000 ft. demonstration project to prevent ATV access	9/1/05
Complete sanitarian survey of homes on Blue Creek	3/1/05
Plan phases to install sewage treatment plant on Blue Creek	10/1/05
DOF will host one logging BMP workshop in each watershed	7/1/05
Implement Little Sandy riparian panting demo project	8/1/05
Begin planning of natural stream restoration on Little Sandy	5/1/05
Begin planning phase of natural stream rest on Blue Creek	6/1/05
Assist NRCS in sign up of EQIP and CREP in watersheds	9/1/05
Assist grassland technician in collecting forage and fecal samples	9/1/05

Conduct watershed education workshop in watersheds	10/1/05
Provide educational material on sediment to ATV riders	7/1/05

The above milestone schedule was from the first workplan proposed. The first two items are behind schedule due to personnel changes. The project should be back on schedule before June of 2005.

Additional Milestones:

The project team will review the progress of the project	12/31/05
A new proposal will be developed	6/1/06
New abandoned gas road restoration projects will be identified and developed.	10/1/06
Construction begins on gas road restorations	6/1/07
Viable septic demo project will be developed	6/1/06
Septic demo project is constructed	6/1/07

By December of 2007 an evaluation of the project and results will be conducted to direct future efforts.

G. A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.

The project team will coordinate the success of implementation of the milestone schedule. The WVDEP Basin Coordinator and the NPS Coordinator will also monitor the implementation schedule. The milestone schedule in (F) will serve as measurable milestones. If any milestone falls behind schedule, the reason will be assessed and corrective action will be taken.

It should be expected that by December 2007 at least ten miles of abandoned gas roads will be restored. The limit to this activity will be the availability of matching funds from non-federal sources. At that time the septic and natural stream design restoration demonstration projects should be completed and early results data should be available. The analysis of the results will be used in the development of future workplans.

H. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised or, in a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

The TMDL for the Lower Elk River calls for load reductions from sedimentation from oil and gas access roads only. It is hoped that by taking a comprehensive approach and addressing several of the numerous issues challenging the health of the creeks within each watershed that greater reductions of heavy metals and fecal coliform bacteria than what is called for will be the result.

Since the development of the TMDL West Virginia has revised its aluminum standard from a total concentration to a dissolved concentration. This would require new TMDL load allocations for aluminum to be developed by WAP in order to match load reductions to a TMDL target. It is expected that the new standard will significantly reduce the required load reductions for aluminum. The iron parameter will be a better determinant of success. The next period for selection of streams for TMDL development that could include the Elk is in 2007 and then again in 2012 for development of TMDLs in 2010 and 2015 respectively.

It is expected that by 2007 this plan would result in 14 miles of restored and retired dirt roads and 20 miles of improved dirt roads still in use. This should result in a reduction of sediment of 470,200 lbs/yr.

The septic issue will be a harder one to gauge and will require site specific monitoring. If the plan stays on target it should be expected that by 2020 all fecal violations will be eliminated.

I. A monitoring component to evaluate the effectiveness of the implementation efforts over time.

The DEP WVSOS Volunteer Monitoring Coordinator will train the members of the Blue Creek and Little Sandy Creek Watershed Associations to help assist with continuous monitoring of both watersheds. The two associations will assist in assessing the success of the projects on a continuous basis. The WAP will conduct monitoring on their regular schedule, which would be in 2007. They will be requested to locate some monitoring sites in strategic locations to assess environmental results from implemented practices and restorations.

The DEP NPS program will conduct supplemental monitoring to target specific data gaps. The parameters monitored will be dependent on the projects and pollutants involved. The various partners in the project team, for the purpose of ongoing reporting, will develop estimates of load reductions based on models.

APPENDIX

Table 2: Load allocation chart from the TMDL

Table 5a. Aluminum baseline conditions and allocations (LAs) for nonpoint sources

	Harvested Forest		Oil and Gas		Road		Nonpoint Source		Mining Related		AML		
SWS	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Requires Reduction
9	44	44	148133	80260	1596	1596	39564	39564	0	0	0	0	X
10	113	113	38739	38739	1007	1007	25292	25292	2110	2110	192	192	
12	53	53	56583	30657	689	689	18413	18413	0	0	1676	1676	X
17	64	64	25431	13779	1506	1506	26912	26912	0	0	6246	6246	X
18	37	37	112531	60970	691	691	13951	13951	0	0	0	0	X
19	10	10	13669	7406	251	251	3613	3613	0	0	0	0	X
20	68	68	93140	50464	864	864	22987	22987	196	196	108	108	X
21	93	93	84675	45986	933	933	22578	22578	268	268	295	295	X

Table 5b. Iron baseline conditions and allocations (LAs) for nonpoint sources

	Harvested Forest		Oil and Gas		Road		Nonpoint Source		Mining Related		AML		
SWS	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Baseline (lbs/yr)	Allocation (lbs/yr)	Requires Reduction
9	330	330	178616	133147	5004	5004	95628	95628	0	0	0	0	X
10	848	848	52712	52712	3057	3057	60320	60320	46367	46367	1526	1526	
12	280	280	68227	50859	1312	1312	30070	30070	0	0	69	69	X
17	339	339	30664	22858	2851	2851	43055	43055	0	0	3289	3289	X
18	282	282	135687	101146	1894	1894	33369	33369	0	0	0	0	X
19	52	52	16482	12286	475	475	6060	6060	0	0	0	0	X
20	510	510	112306	83717	2359	2359	53094	53094	4029	4029	872	872	X
21	520	520	102340	76288	2180	2180	39284	39284	231	231	116	116	X

Little Sandy (SWS 18 on the TMDL chart) contributes 171,232 lbs/yr of iron and 127,210 lbs/yr of total aluminum.

Blue Creek (SWS 20 on the TMDL chart) contributes 173,170 lbs/yr of iron and 117,363 lbs/yr of total aluminum.